

# **City of New Castle**

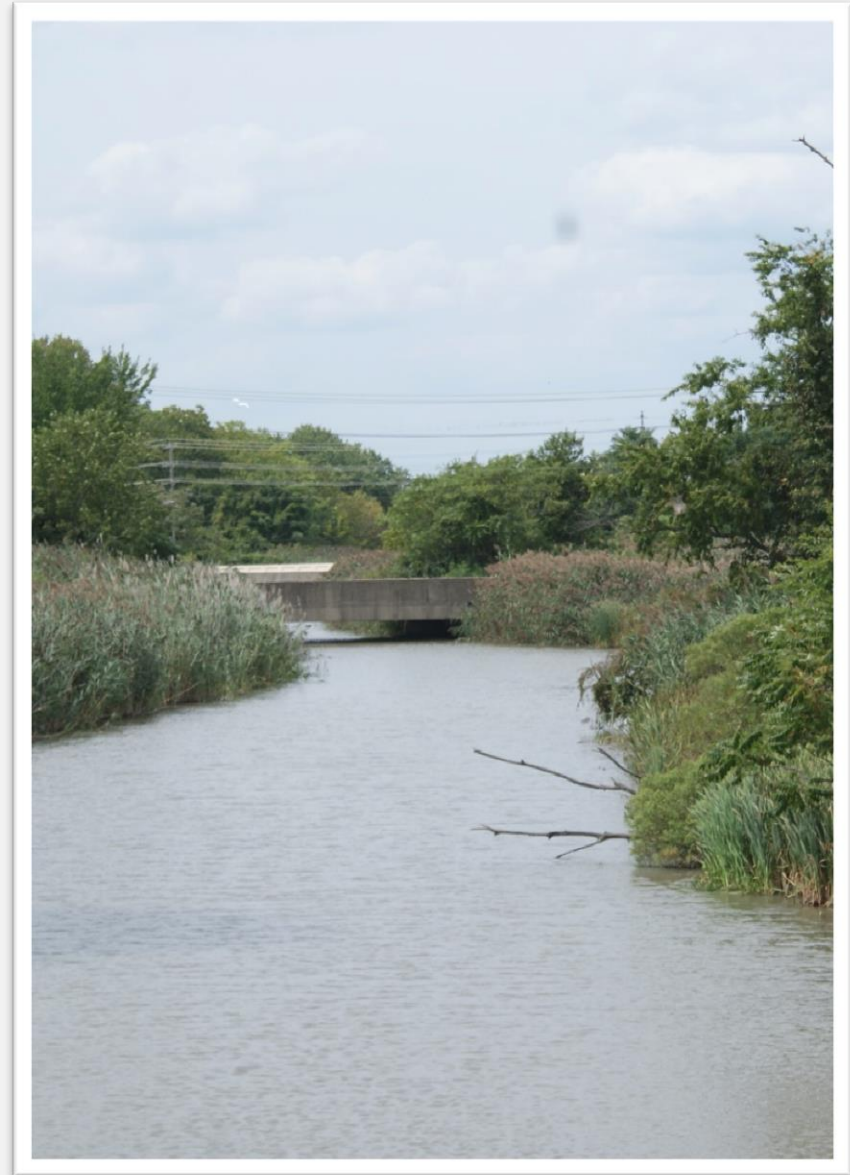
## **Resilient Community Partnership**



Kelly Valencik, Planner  
**DNREC Delaware Coastal Programs**

# Overview of Presentations

- Resilient Community Partnership (RCP) Summary
- Next steps for City
- What you can do at home to prepare for flooding



# Resilient Community Partnership

## *DNREC Delaware Coastal Programs*

Preparing for Hazards Today - Planning for Risks Tomorrow

GOAL: To help communities undertake the necessary planning to become more *resilient* to coastal hazards



Hurricane Irene - City of New Castle, 2011

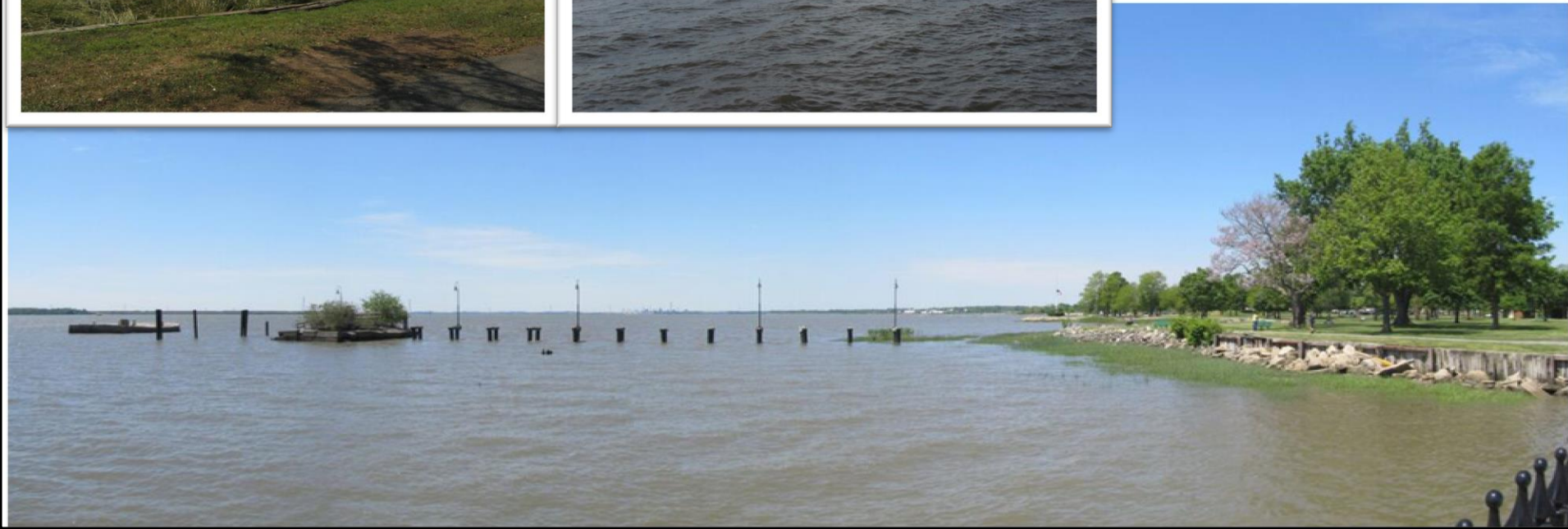


# Resilient Community Partnership Project:

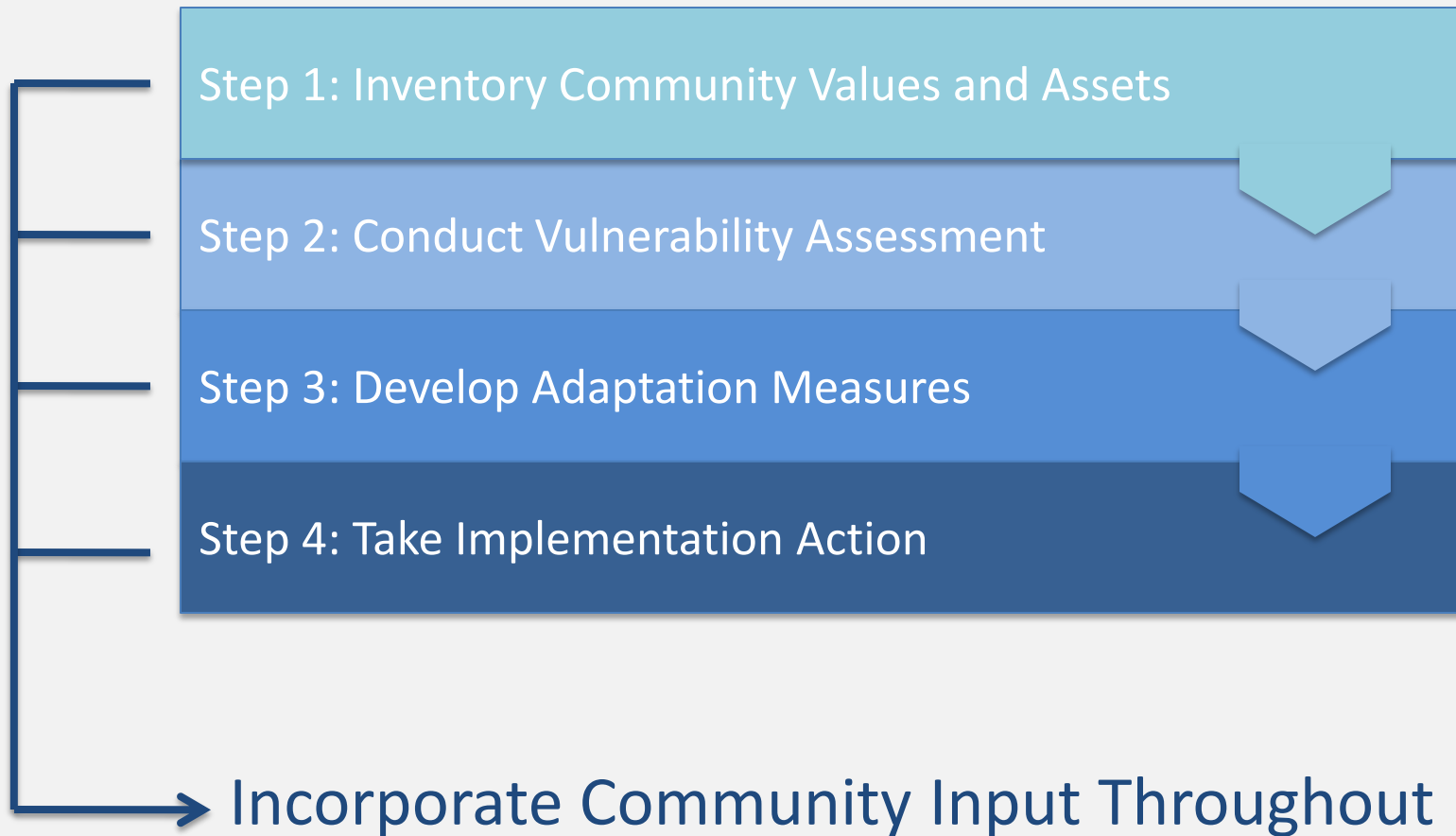
## Analyze City's Vulnerability to Flooding and Recommend Adaptation and Mitigation Strategies



Before & After  
Superstorm  
Sandy



# Steps to Community Resilience



### Formation of the Preparedness Task Force:

- Guidance about priority areas in the City affected by flooding
- Vet the inundation maps
- Identify critical structures/infrastructure at risk



## Step 1: Inventory Community Values and Assets

# Background research

- Compilation of previous studies on flood risks and City features (dikes)
- Inventory of Community Assets





### Public Workshop in September 2017

- Shared project's goals for community resiliency
- Collected resident and stakeholder feedback
  - Priority areas to address
  - Inundation maps
  - Feedback on adaptation ideas



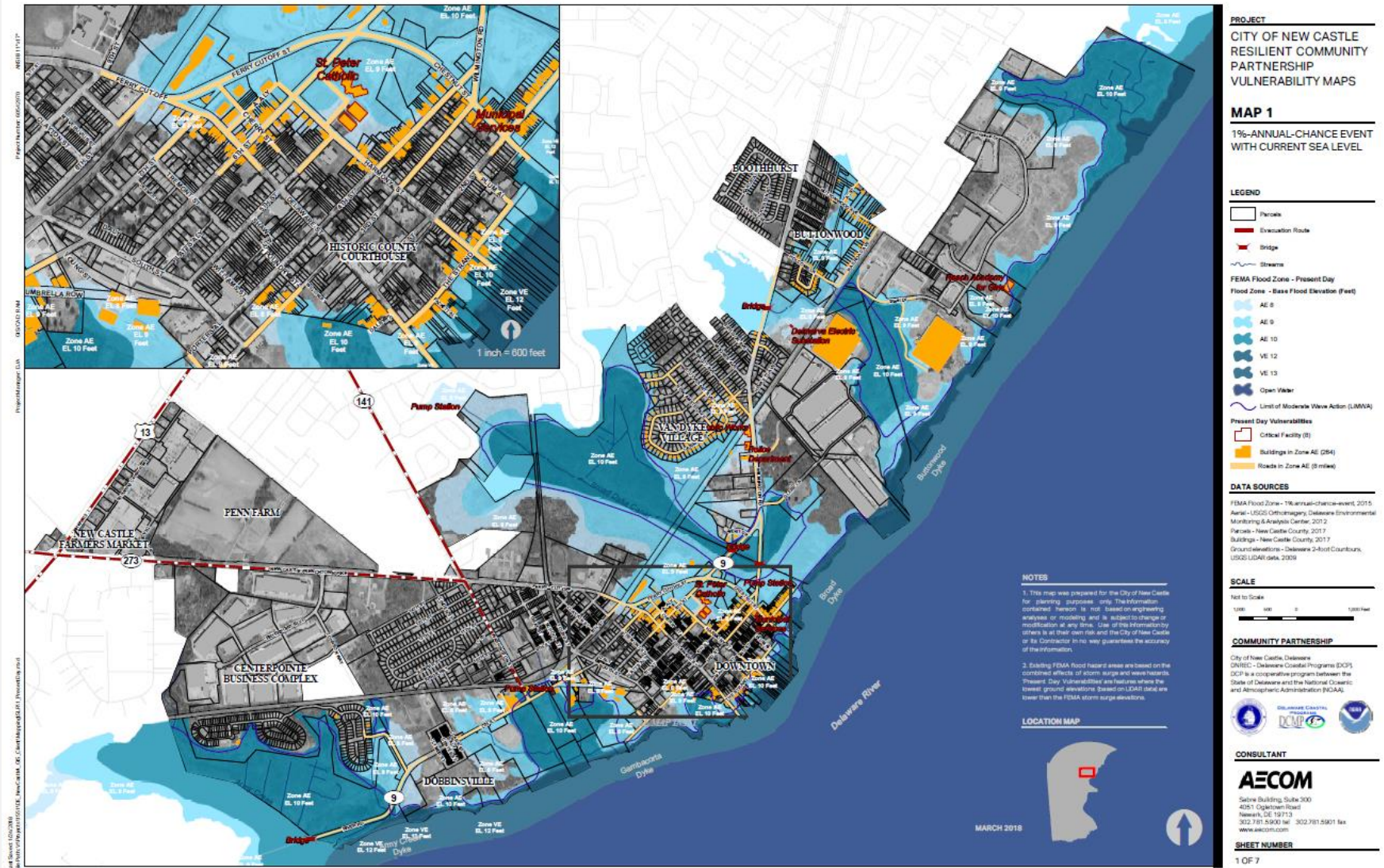


# Flood Risks in the City of New Castle

- Storms, including storm surge
- Extreme high tides
- Heavy precipitation events
- Sea level rise

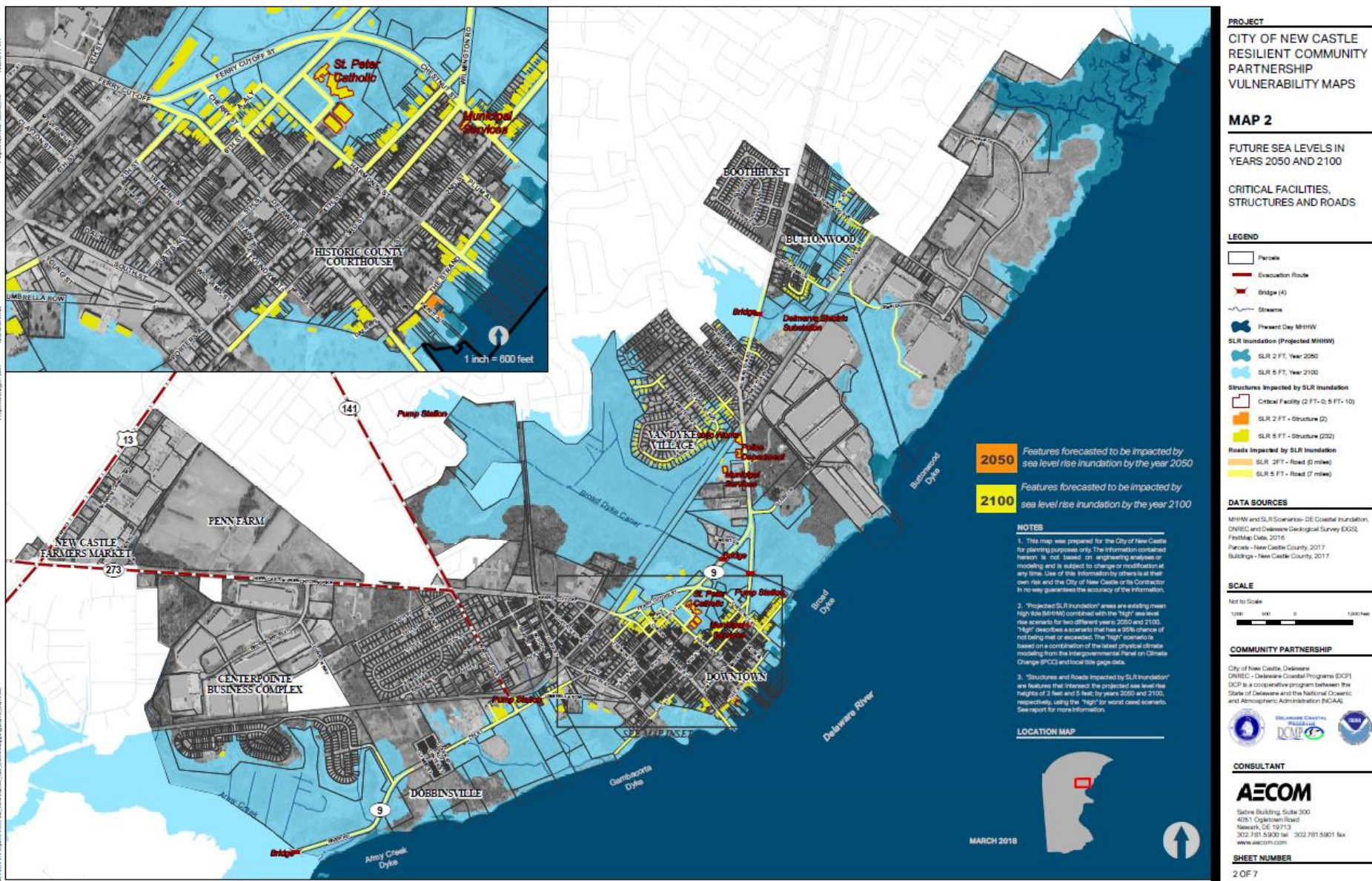


# Inundation Maps: 1% Annual Chance with current sea level



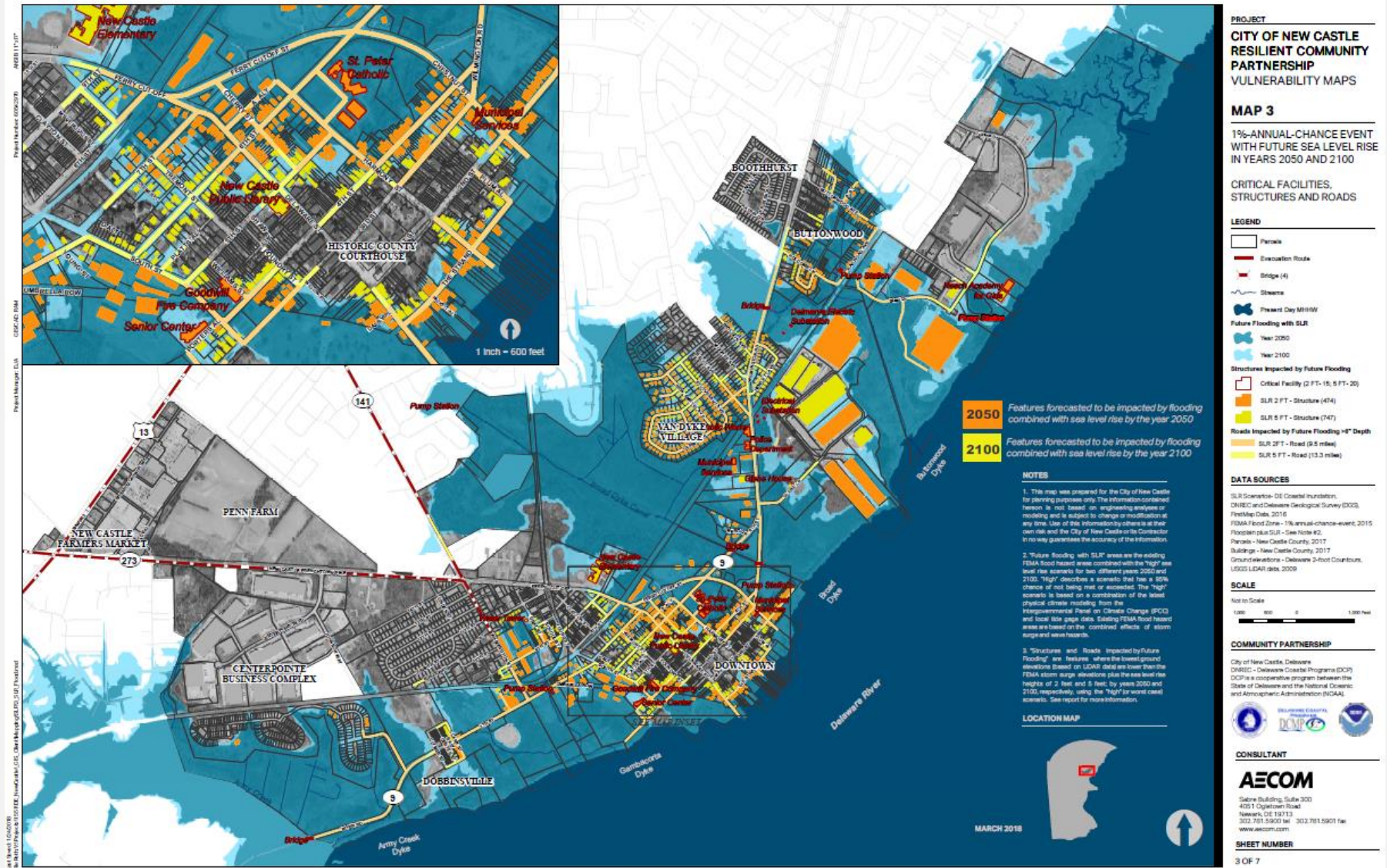


# Inundation Maps: Years 2050 & 2100





# Inundation Maps: 1% Annual Chance Years 2050 & 2100



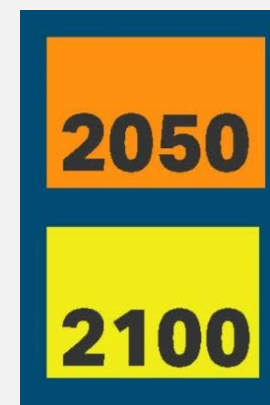
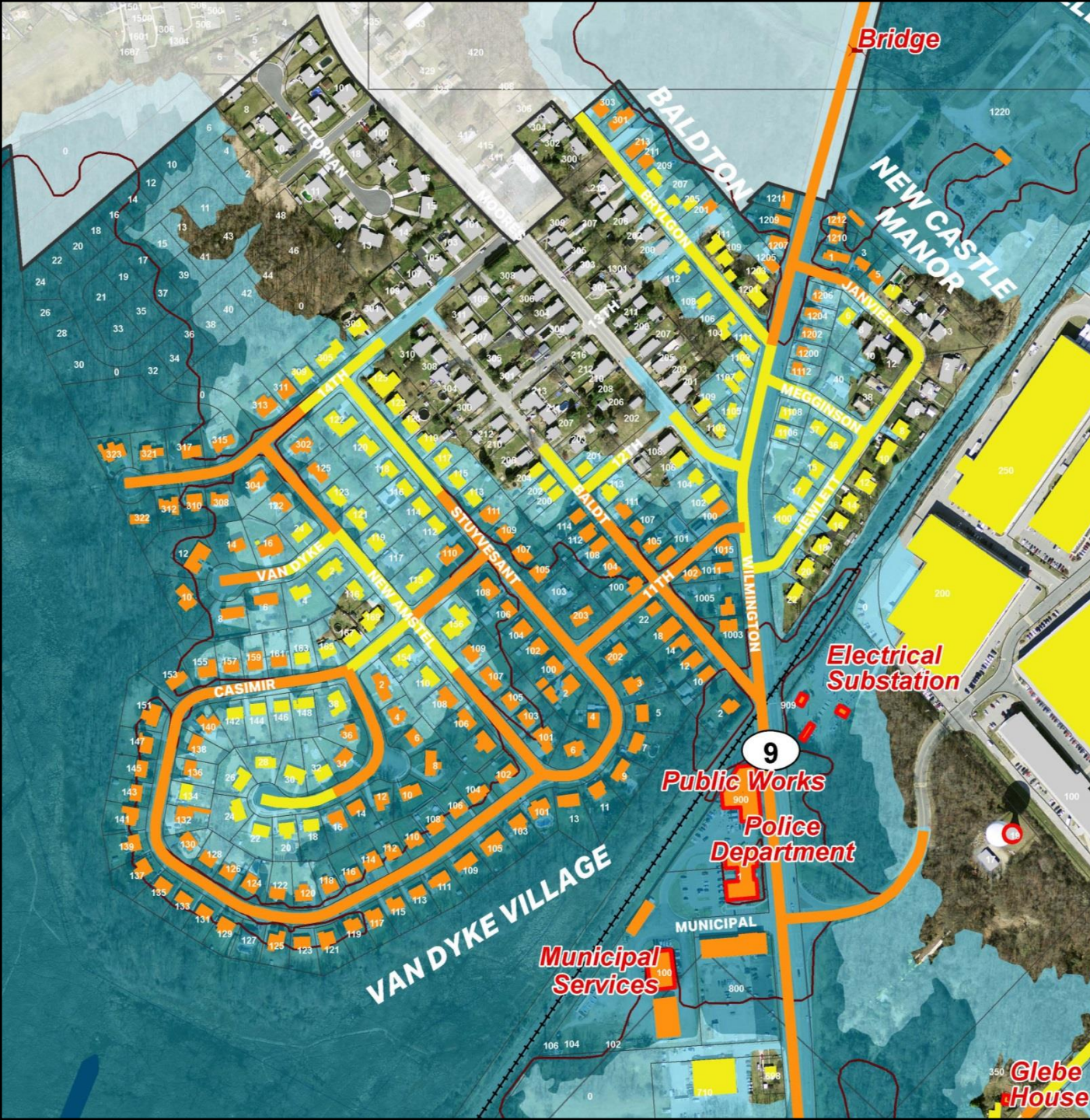




# 2050

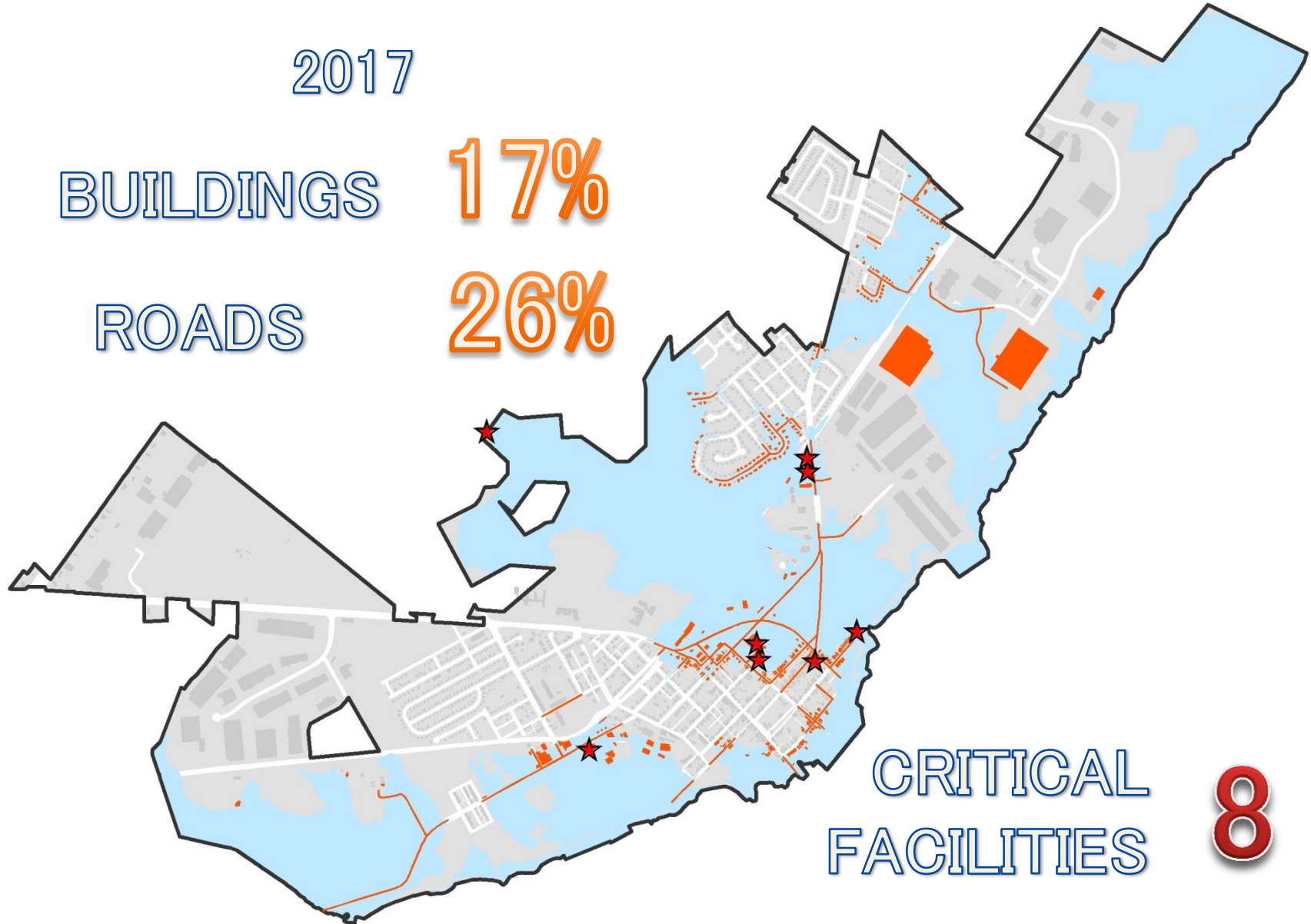
2100







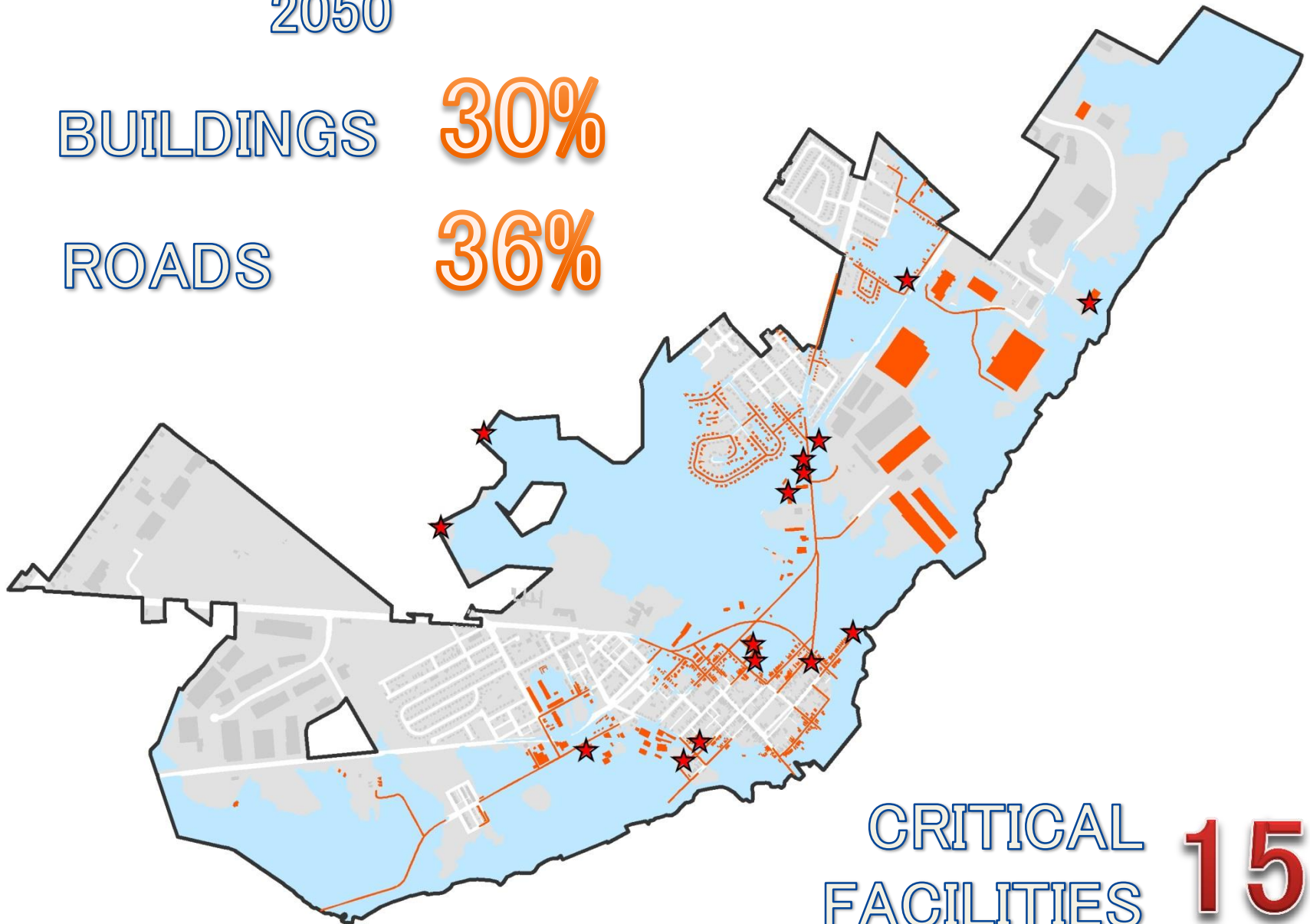
# Key Findings from the modeling include:



2050

BUILDINGS 30%

ROADS 36%



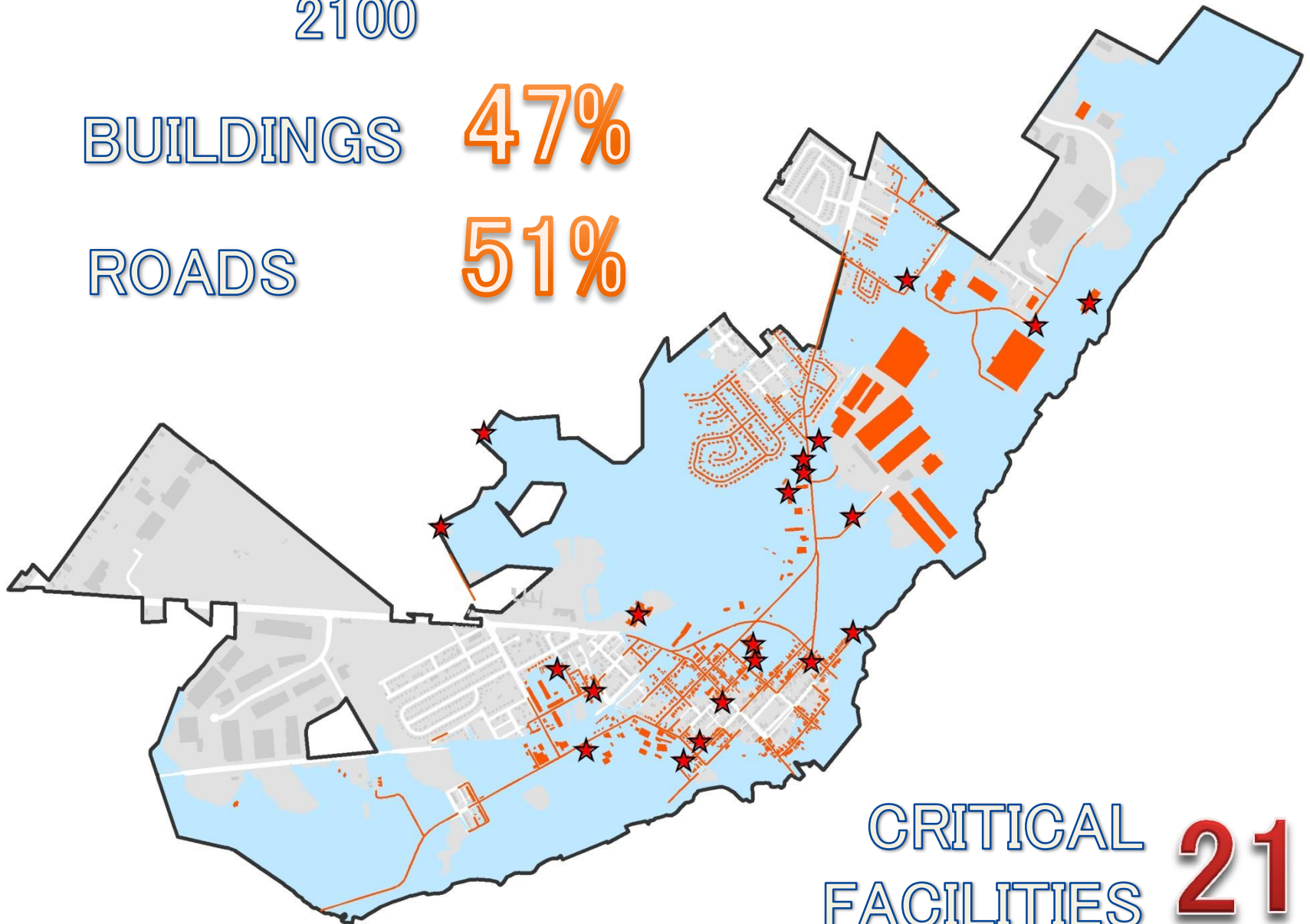
CRITICAL  
FACILITIES 15



2100

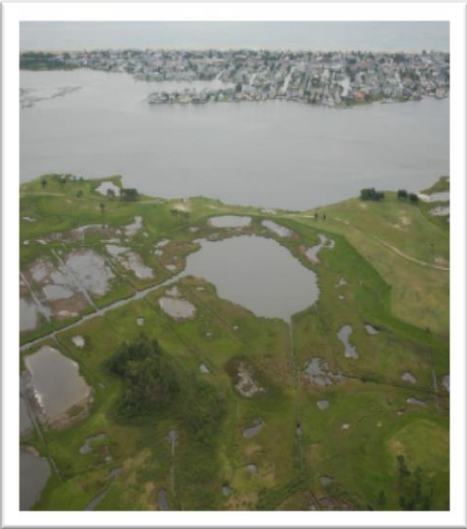
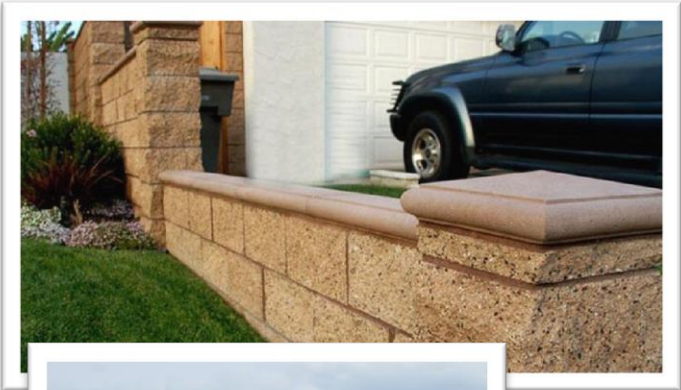
BUILDINGS 47%

ROADS 51%

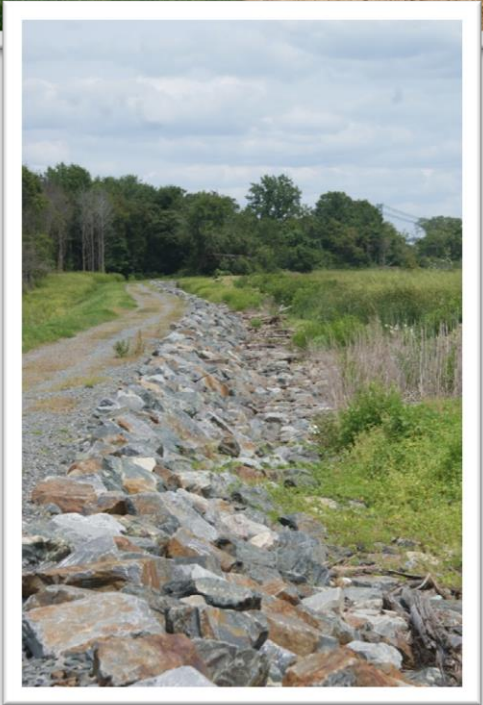


CRITICAL FACILITIES 21

# Step 3: Develop Adaptation Measures



**Avoid**



**Protect**



**Accommodate**



**Retreat**

### Worked with Advisory Committee to refine options

- Emphasis on educational and outreach options
- Some are doable now, others will need additional resources or information to conduct

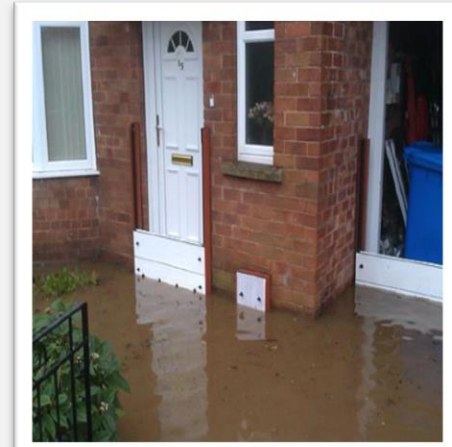




# Short Term Options

## Step 3: Develop Adaptation Measures

- **Planning**
  - Identify safe parking areas for cars
  - Guide growth away from areas at risk
  - Update City Emergency Ops Plan
- **Community Engagement**
  - Continue Flood Preparedness Task Force
  - Provide resources for residents to address vulnerabilities
- **Regulatory & Economic**
  - Amend codes to enhance flood protection
  - Study benefit/cost ratio of adaptation options





# Long Term Options

## Step 3: Develop Adaptation Measures

- **Infrastructure**

- Raise or protect roads and infrastructure from flooding
- Raise dikes add/or add additional dikes at Battery Park and The Strand

- **Natural Resources**

- Protect shorelines from erosion
- Restore and conserve wetlands to increase flood storage capacity
- Increase green infrastructure & nature-based solutions

- **Acquisition**

- Acquire vulnerable properties that would lesson risk and improve City resilience to flooding



# Decision Support Activities

## Step 3: Develop Adaptation Measures

### • Data Collection

- Determine ground floor elevations of vulnerable critical structures
- Survey drainage inlets and outfalls to determine water conveyance capacity
- Install surface water sensors to help predict flooding on roads and other areas
- Potential impacts of flooding to natural resources

### • Modeling

- Model coastal storm impacts to community from waves and sea level rise
- Examine storm drainage systems to determine drain constraints and capacity issues
- Model groundwater to determine saltwater intrusion to systems



## Several Measures Already in Place

- Assessment, maintenance and raising of the four dikes
- Feasibility study for living shoreline in Battery Park
- Retrofitting of six existing stormwater management facilities
- Wetlands creation and enhancement
- Clearing and construction of an outlet for the stormwater collection system at Washington Park
- Attaining a classification of 8 in FEMA's Community Ratings System = 10% discount on flood insurance premiums
- Education and outreach to residents in newsletters & online
- Routine cleaning of storm drain inlets in advance of storms
- Coordination with property owners on installation of flood panels

## Starting Now

The City of New Castle is planning now for impacts of sea level rise that may occur 80+ years from now because it takes decades to build new infrastructure.

By planning for the worst case scenario, we will be better able to address the eventual challenges.



## Recommendations already completed:

- ✓ Characterized Risks of Flooding into the Future
- ✓ Established Flood Preparedness Task Force
- ✓ Identify Adaptation and Mitigation Strategies to Manage Risks and Improve Resiliency
- ✓ Hold outreach event on community preparedness

# New Castle Has a History of Resiliency and Adaptation



# ***You're Invited!***

- Get a copy of the full report and maps
- Review our flood and sea level rise inundation maps
- Share your input via comment sheets
- Questions? Want to learn what you can do?  
Experts are standing by...